

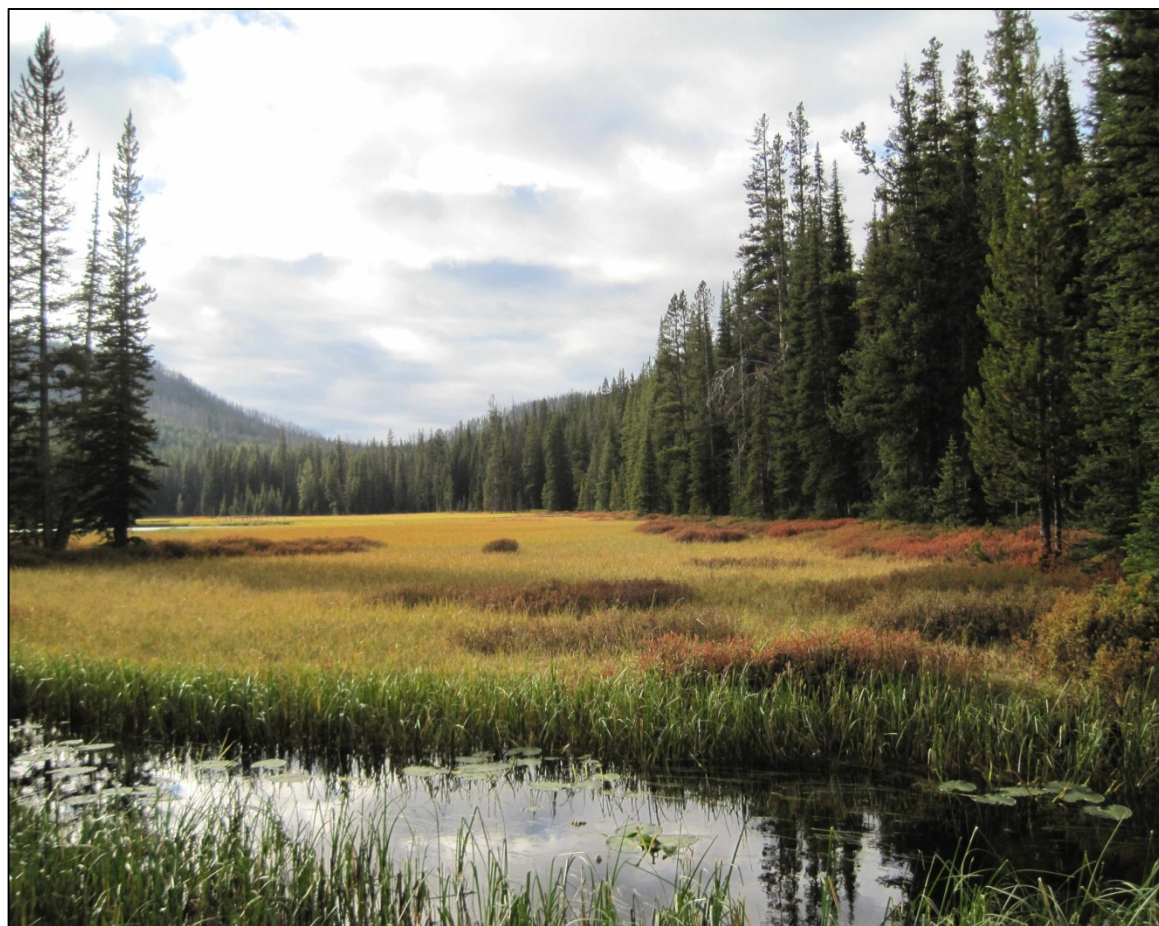


**US Army Corps
of Engineers®**
Engineer Research and
Development Center

National Wetland Plant List Indicator Rating Definitions

Robert W. Lichvar, Norman C. Melvin,
Mary L. Butterwick, and William N. Kirchner

July 2012



National Wetland Plant List Indicator Rating Definitions

Robert W. Lichvar

*Cold Regions Research and Engineering Laboratory
U.S. Army Engineer Research and Development Center
72 Lyme Road
Hanover, NH 03755*

Norman C. Melvin

*National Wetland Technology Development and Acquisitions Team
Natural Resources Conservation Service, Central National Technology Support Center
501 West Felix Street, Bldg. 23
Fort Worth, TX 76115*

Mary L. Butterwick

*Clean Water Act Compliance Office
U. S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105*

William N. Kirchner

*National Wetland Inventory
U.S. Fish and Wildlife Service, Region 1
911 NE 11th Avenue
Portland, Oregon 97232-4128*

Approved for public release; distribution is unlimited.

Abstract

For over two decades, the National List of Plant Species that Occur in Wetlands has served as the standard reference for plant species' wetland indicator status ratings in the United States. In 2012 the list, now called the National Wetland Plant List, was updated and approved for use for various purposes by the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), and the USDA Natural Resources Conservation Service (NRCS). Prior to the update, wetland plant species were rated using five categories, based on percentages representing the frequency that a species occurs in a wetland. The updated list uses the same five categories but they are now defined based on qualitative ecological descriptions. Quantitative frequency categories are now used only for field-based studies designed to challenge a species' wetland rating. This Technical Note presents the new definitions for the five wetland plant categories. A long version is intended to standardize the groups using wetland features to define the groups, and a short version is intended to be easy to use for everyday purposes.

DISCLAIMER: The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. All product names and trademarks cited are the property of their respective owners. The findings of this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

DESTROY THIS REPORT WHEN NO LONGER NEEDED. DO NOT RETURN IT TO THE ORIGINATOR.

Table of Contents

Abstract.....	ii
Preface.....	iv
1 Introduction.....	1
2 Final Definitions.....	3
2.1 Short version.....	3
2.2 Long version.....	3
References.....	7
Report Documentation Page	

Preface

This research was funded by the Wetland Regulatory Assistance Program (WRAP), U.S. Army Corps of Engineers.

The principal investigator was Robert W. Lichvar, of the Remote Sensing/Geographic Information Systems (RS/GIS) and Water Resources Branch, Cold Regions Research and Engineering Laboratory (CRREL), U.S. Army Engineer Research and Development Center (ERDC), Hanover, NH; Dr. Norman Melvin, Natural Resources Conservation Service; Mary Butterwick, U.S. Environmental Protection Agency; and William Kirchner, U.S. Fish and Wildlife Service. This study was conducted under the general supervision of Timothy Pangburn, Chief, RS/GIS and Water Resources Branch; Dr. Justin B. Berman, Chief, Research and Engineering Division; Dr. Lance Hansen, Deputy Director; and Dr. Robert E. Davis, Director. Permission to publish was granted by Director, Cold Regions Research and Engineering Laboratory.

COL Kevin J. Wilson was the Commander and Executive Director of ERDC, and Dr. Jeffery P. Holland was the Director.

1 Introduction

For over two decades, the National List of Plant Species that Occur in Wetlands (Reed 1988) (hereafter called List 88) has served as the standard reference for plant species' wetland indicator status ratings in the United States. These ratings are used for many purposes, including wetland delineations, assessment, mitigation, and habitat restoration. List 88 was developed by the U.S. Fish and Wildlife Service (FWS) in cooperation with three other Federal agencies: the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), and the USDA Natural Resources Conservation Service (NRCS) (Lichvar and Minkin 2008). Wetland indicator status ratings were assigned to plant species that occur in wetlands in 13 FWS regions. The five rating categories that were initially assigned to List 88 (Table 1) were developed through a thorough review of the botanical literature and the best professional judgment of national and regional experts. Each plant species was assigned a rating that represented the estimated probability, or frequency, with which it was thought to occur in wetlands, as opposed to non-wetlands, across its entire range. Plus (+) or minus (–) indicators were used to describe species with frequencies that were intermediate between two categories.

Table 1. Wetland indicator status ratings and their rating categories, as described in the National List of Plant Species that Occur in Wetlands (Reed 1988).

Indicator status (abbreviation)	% Occurrence in wetlands
Obligate (OBL). Occur almost always under natural conditions in wetlands.	99
Facultative Wetland (FACW). Usually occur in wetlands but occasionally found in non-wetlands.	67–99
Facultative (FAC). Equally likely to occur in wetlands and non-wetlands.	34–66
Facultative Upland (FACU). Usually occur in non-wetlands but occasionally found in wetlands.	1–33
Upland (UPL). Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.	1

In 2006 the USACE assumed administrative responsibility for List 88, re-naming it the National Wetland Plant List (NWPL) (https://wetland_plants.usace.army.mil). The USACE initiated a national effort, led by a National Panel (NP) made up of representatives of the four agencies responsible for the NWPL, to update the NWPL indicator status categories, nomenclature, and geographic regions (Lichvar and Minkin 2008). To more accurately reflect the existing information on plant frequencies, the NP dropped the 1988 numeric rating categories and revised the narrative definitions to be based on ecological descriptions (Table 2). The plus (+) and minus (–) indicators were eliminated. A web-based voting procedure was developed to assign these new, descriptive wetland indicator categories to a draft list of wetland plant species.

Table 2. Wetland indicator status ratings based on ecological descriptions.

Indicator status (abbreviation)	Ecological description (Lichvar and Minkin 2008)
Obligate (OBL)	Almost always is a hydrophyte, rarely in uplands
Facultative Wetland (FACW)	Usually is a hydrophyte but occasionally found in uplands
Facultative (FAC)	Commonly occurs as either a hydrophyte or nonhydrophyte
Facultative Upland (FACU)	Occasionally is a hydrophyte, but usually occurs in uplands
Upland (UPL)	Rarely is a hydrophyte, almost always in uplands.

2 Final Definitions

As the NWPL update neared completion, the NP decided that the 2008 definitions (Table 2) needed more clarity and would benefit from including examples of species in the various categories. As a result, the NP and the National Technical Committee for Wetland Vegetation (NTCWV) further refined the wetland indicator definitions (Lichvar and Gillrich 2011). The NTCWV/NP definitions were found to be useful in distinguishing between different ratings, so the NP referred to them in the final steps of updating the NWPL for unresolved species.

2.1 Short version

The NTCWV/NP developed both detailed definitions and examples of plants found in each category. Those definitions and examples are too extensive for daily use and insertion into other key published materials. For more general or “daily” use, the NP reduced the longer NTCWV/NP definitions to shorter versions. The shorter definitions are specifically intended to represent the longer version and their examples. The shorter definitions are:

- **OBL** (Obligate Wetland Plants)—Almost always occur in wetlands.
- **FACW** (Facultative Wetland Plants)—Usually occur in wetlands, but may occur in non-wetlands.
- **FAC** (Facultative Wetland Plants)—Occur in wetlands and non-wetlands.
- **FACU** (Facultative Upland Plants)—Usually occur in non-wetlands, but may occur in wetlands.
- **UPL** (Upland Plants)—Almost never occur in wetlands.

2.2 Long version

The shorter working definitions are linked to the following NTCWV/NP definitions. The longer version is more descriptive and includes example species from across the United States and from various habitats. The NTCWV/NP definitions are as follows:

OBL (Obligate Wetland Plants)—Almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing

water or seasonally saturated soils (14 or more consecutive days) near the surface.

These plants are of four types (examples included):

- Submerged (plants that conduct virtually all of their growth and reproductive activity under water). Examples include *Myriophyllum* spp. (water milfoil), *Najas* spp. (water-nymph), and *Potamogeton* spp. (pondweed).
- Floating (plants that most often grow with the leaves and other vegetative and reproductive organs floating on the water surface). Examples include *Lemna minor* (common duckweed), *Brasenia schreberi* (watershield), and *Wolffia borealis* (northern watermeal).
- Floating-leaved (plants that are rooted in sediment but also have leaves that float on the water surface). Examples of floating-leaved plants include *Marsilea vestita* (hairy water clover), *Nuphar lutea* (yellow pond lily), and *Nymphaea odorata* (American water lily).
- Emergent (herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level). Examples of emergent plants include *Sagittaria* spp. (arrowhead), *Typha* spp. (cattail), *Zizania aquatica* (Indian wild rice), *Downingia bicornuta* (double-horned calico flower), *Cephalanthus occidentalis* (common buttonbush), *Nelumbo lutea* (American lotus), *Carya aquatica* (water hickory), *Leersia oryzoides* (rice cut grass), *Acorus americanus* (sweetflag), *Carex aquatilis* (leafy tussock sedge), and *Toxicodendron vernix* (poison sumac).

FACW (Facultative Wetland Plants)—Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

Examples include *Carex scoparia* (broom sedge), *Aconitum columbianum* (Columbian monk's hood), *Cornus amomum* (silky dogwood), *Eleocharis compressa* (flat-stem spike rush), *Equisetum variegatum* (variegated scouring rush), *Lysimachia ciliata* (fringed yellow loosestrife), *Platanthera dilatata* (scentbottle), *Salix amygdaloides* (peach-leaf willow), *Ranunculus flammula* (greater creeping spearwort), *Ranunculus*

inamoenus (graceful buttercup), *Sanguisorba canadensis* (Canadian burnet), *Symphyotrichum novae-angliae* (New England aster), *Viola nephrophylla* (northern bog violet), and *Tamarix chinensis* (five stamen tamarisk).

FAC (Facultative Plants)—Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic,* or xeric** habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

Examples include *Agrostis scabra* (rough bent grass), *Cornus drummondii* (rough-leaf dogwood), *Carpinus caroliniana* (American hornbeam), *Pseudognaphalium stramineum* (cotton-batting-plant), *Staphylea trifolia* (American bladdernut), *Ulmus rubra* (slippery elm), and *Zizia aurea* (golden alexander).

FACU (Facultative Upland Plants)—Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

Examples include *Amaranthus albus* (tumbleweed), *Achillea millefolium* (common yarrow), *Arabis hirsuta* (hairy eared rockcress), *Ambrosia artemisifolia* (annual ragweed), *Betula papyrifera* (paper birch), *Carex eburnea* (bristle-leaf sedge), *Carya ovata* (shag-bark hickory), *Elymus glaucus* (blue rye grass), *Eragrostis pilosa* (Indian love grass), *Oenothera biennis* (king's-cureall), *Ostrya virginiana* (eastern hop-hornbeam),

* The mesic habitat descriptions used here are based heavily, but not entirely, on Curtis (1959). We define mesic as occurring in a variety of habitats, typically with dense vegetation that shades “damp or moist” soils that are not hydric. In these settings, organic matter, which accumulates as plants decay, moderates soil temperatures and increases the soil’s water-holding capacity.

** Nationally, the habitat description “xeric” is based in two different concepts. The xeric habitats of the Arid West typically occur in areas of low rainfall and in what are referred to as desert conditions. The other concept of xeric occurs throughout the remainder of the country in habitats often, but not always, located on hilltops and ridges, on south- or west-facing slopes, or on flatlands with sandy, porous soils. Vegetative cover in xeric habitats is sparser than the vegetation associated with mesic soils. As such, more sunlight reaches the soil surface, creating warmer, drier conditions in the rooting zone. Surface runoff and wind often erode topsoil, maintaining a shallow, excessively well drained to dry soil profile with a low water-holding capacity.

Prunus serotina (black cherry), *Phleum pretense* (common timothy), *Sarcobatus vermiculatus* (greasewood), *Solidago canadensis* (Canadian goldenrod), *Schizachyrium scoparium* (little false bluestem), and *Tilia americana* (American basswood).

UPL (Upland Plants)—Almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

Examples of upland plants include *Artemisia vulgaris* (common wormwood), *Epilobium brachycarpum* (tall annual willow herb), *Prenanthes aspera* (rough rattlesnake root), and *Quercus prinus* (chestnut oak).

References

- Curtis, J. T. 1959. *The Vegetation of Wisconsin: An Ordination of Plant Communities*. Second edition. Madison, WI: University of Wisconsin Press.
- Lichvar, R., and J. Gillrich. 2011. *Final Protocols for Assigning Wetland Indicator Status Ratings during National Wetland Plant List Update*. ERDC/CRREL TN-11-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.
- Lichvar, R., and P. Minkin. 2008. *Concepts and Procedures for Updating the National Wetland Plant List*. ERDC/CRREL TN-08-03. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. <http://libweb.erdclib.usace.army.mil/Archimages/2295.PDF>.
- Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands*. Washington, DC: U.S. Fish and Wildlife Service.

REPORT DOCUMENTATION PAGE				<i>Form Approved</i> OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) July 2012		2. REPORT TYPE Technical Note		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE National Wetland Plant List Indicator Rating Definitions				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Robert Lichvar, Norman C. Melvin, Mary L. Butterwick, and William N. Kirchner				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory 72 Lyme Road Hanover, NH 03755-1290				8. PERFORMING ORGANIZATION REPORT NUMBER ERDC/CRREL TN-12-1	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited. Available from NTIS, Springfield, Virginia 22161.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT For over two decades, the National List of Plant Species that Occur in Wetlands has served as the standard reference for plant species' wetland indicator status ratings in the United States. In 2012 the list, now called the National Wetland Plant List, was updated and approved for use for various purposes by the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), and the USDA Natural Resources Conservation Service (NRCS). Prior to the update, wetland plant species were rated using five categories, based on percentages representing the frequency that a species occurs in a wetland. The updated list uses the same five categories but they are now defined based on qualitative ecological descriptions. Quantitative frequency categories are now used only for field-based studies designed to challenge a species' wetland rating. This Technical Note presents the new definitions for the five wetland plant categories. A long version is intended to standardize the groups using wetland features to define the groups, and a short version is intended to be easy to use for everyday purposes.					
15. SUBJECT TERMS National Wetland Plant List Wetland indicators <div style="text-align: right; margin-right: 100px;">Wetland plants</div>					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)